

ship May 5.

Work Order ID 144988

144988

Page 1

Thursday, April 28, 2016 1:18:00 PM

Item ID: D3518-3 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Ball Joint End
 Start Date: 4/29/2016 Start Qty: 10.00 *10* Cust Item ID:
 Required Date: 5/4/2016 Req'd Qty: 10.00 *10* Customer:
 Reference:

Approvals: Process Plan: dem SK Date: 16/04/28 Tooling: _____ Date: _____
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____
 Run Start *NR1*
 Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D3518	Rev B								
100	PURCHASING	0.00				10		APR 29 2016	DAS 13 9-89
100									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <u>32209</u> Purchase Part Number: 2458K14 Supplier: Mc Master Carr Certificate of conformity is required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.20							
Packaging	Ensure certificate of conformity is attached								
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control									

10x 80/6-05-03

(10) DAS
38
MAY 03 2016

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		
Root Cause		FAULT CATEGORY							
Environment ☐	☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐			
Design ☐	☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐			
Doc/Data ☐	☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐			
Equip/Tooling ☐	☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐			
Handling/Pre ☐	☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐			
Material ☐	☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐			
Internal Transport ☐	☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐			
Tribal Knowledge ☐	☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐			
LOA ☐	☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐			
Substation ☐	☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐			
Past Expiry Date ☐	☐	Manufacturing Process ☐	OTHER : _____						
Misidentified ☐	☐	Past Due ☐							

144988

Thursday, April 28, 2016 1:18:00 PM

N900040100

Setup Start *NS1*

Stop *NS2*

Stop *NS2*

10

Cust Item ID:

10

Customer:

Reference:

Run Start *NR1*

Stop ***NR2***

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Stop ***NR2***

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------	--------	-----------	------------	------------	---------------	-------------

Identify as per dwg & Stock Location: 51040

0.00

130

Packaging

Memo

0.10

Packaging

QC21- Final Inspection - Work Order Release

0.00

140

OC

Memo

1.00

Quality Control

M CJ MAY 04 2016

MCS MAY 04 2016

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	☐ No Re-verification	☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong				
Design ☐	☐ Operator	☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions				
Doc/Data ☐	☐ Offset/Setup	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance				
Equip/Tooling ☐	☐ Supplier	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect				
Handling/Pre ☐	☐ Training	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing				
Material ☐	☐ Use for Testing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved				
Internal Transport ☐	☐ Poor Information	☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing				
Tribal Knowledge ☐	☐ Rushing	☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish				
LOA ☐	☐ Product Improvement	☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread				
Substation ☐	☐ Process Improvement	☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence				
Past Expiry Date ☐	☐ Manufacturing Process	OTHER :							
Misidentified ☐	☐ Past Due								

Picklist Print

Thursday, April 28, 2016 1:18:07 PM

Page 1

Work Order ID: 144988

144988

Parent Item: D3518-3

D3518-3

Parent Item Name: Ball Joint End

Start Date: 4/29/2016

Required Date: 5/4/2016

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP Rev:A New Issue 06-11-22 JLM
IPP rev B rev b dwg 07.04.09 EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
2458K14		Purchased		No		100	Each	0.0000	1	10			

2458K14

rod end

10x sp/6-05-03

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



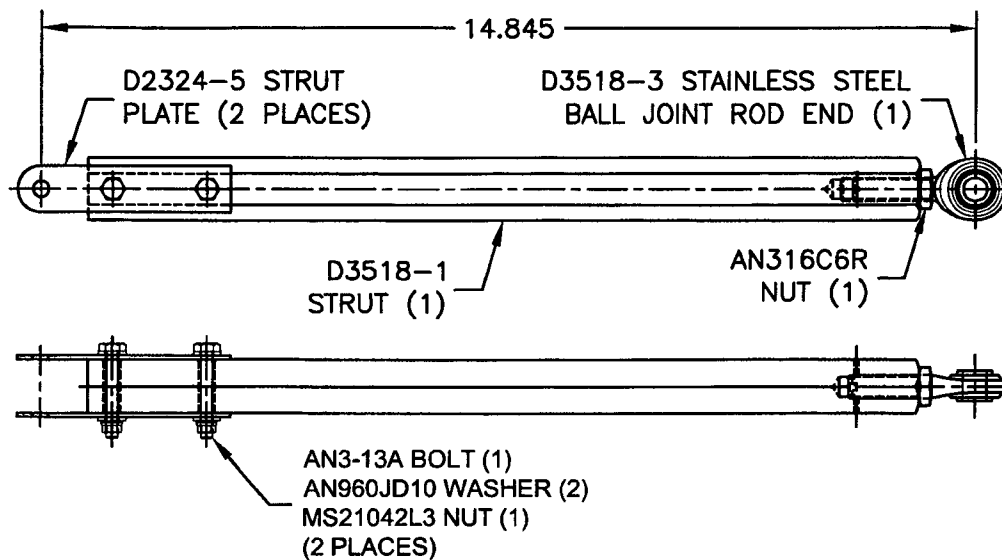
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								



DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>PH</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D3518	REV. B SHEET 1 OF 3
DATE 06.10.23		TITLE BASKET (A119) STRUT SCALE 1:3	
A	06.06.21	NEW ISSUE	
B	06.10.23	RE-DESIGN	



D3518-041 STRUT ASSEMBLY

QTY -041	Part Number	Description
X	D3518-041	STRUT ASSEMBLY
2	D2324-5	STRUT PLATE
1	D3518-1	STRUT
1	D3518-3	STAINLESS STEEL BALL JOINT ROD END
2	AN3-13A	BOLT
1	AN316C6R	NUT
4	AN960JD10	WASHER
2	MS21042L3	NUT

NOTES:

- 1) IDENTIFY WITH DART P/N "D3518-041" USING FINE POINT PERMANENT INK MARKER

RELEASED
06.11.17 *[Signature]*

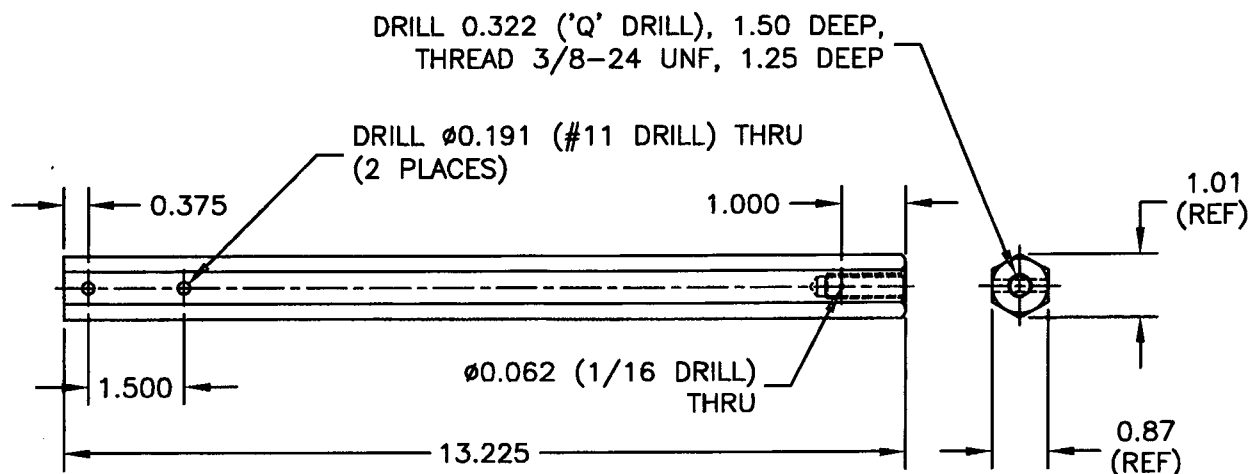
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W/O 144988
8m 16/04/28



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CHECKED <i>PH</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D3518	REV. B SHEET 2 OF 3
DATE 06.10.23	TITLE BASKET (A119) STRUT		SCALE 1:3



D3518-1 STRUT

NOTES:

- 1) MATERIAL: M6061-T6 (OR 6061-T651/T6510/T6511/T62) ALUMINUM HEX BAR PER AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116) OR PER AMS-QQ-A-200/8 (OR AMS 4160) (REF DART MATERIAL SPEC M6061T6H0.875)
- 2) FINISH: ACID ETCH AND ALODINE PER DART QSI 005 4.1 POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES 0.005 TO 0.010 MAX

RELEASED

06.11.17 *[Signature]*

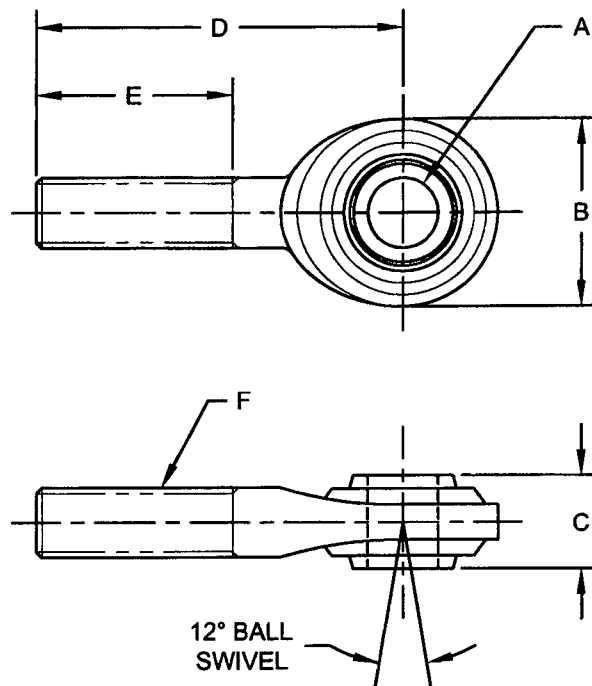
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CHECKED <i>PH</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D3518	REV. B SHEET 3 OF 3
DATE 06.10.23		TITLE BASKET (A119) STRUT	SCALE 1:1

SPECIFICATION CONTROL DRAWING



DART P/N	A	B	C	D	E	F	LOAD*	POSSIBLE SUPPLIER
D3518-3	0.375	1.00	0.50	1.938	1.25	3/8-24 UNF, RH	4012	McMASTER-CARR, P/N 2458K14

* Indicated load is Static Radial Load Capacity in lbs

NOTES:

- 1) TYPE: MALE THREADED SHANK CARBON-FIBER-REINFORCED PLASTIC RACE BALL JOINT ROD END
- 2) MATERIAL: ZINC PLATED STEEL HOUSING BALL WITH PTFE LUBRICATED CARBON-FIBER-REINFORCED PLASTIC RACE.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES

RELEASED

06.11.17 *[Signature]*

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO32209**

Purchase Order Date 4/29/2016

PO Print Date 4/29/2016

Page Number 1 of 2

Order From :

VU-MCM001

Ship To : DART AEROSPACE LTD

MCMaster-CARR SUPPLY CO,
P.O. BOX 7690
CHICAGO, IL 60680-7690
US

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

E-MAILED

Contact Name

Vendor Phone 330 995 5500

Ship To Contact

Ship To Phone

Ship Via: Purolator ground ppd

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

Terms

Currency

FOB

10127-2607

Net 10

USD

FCA - (Free Carrier)

APR 29 2016

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	2458K14	rod end	5/3/2016 Yes 5/3/2016		10.00 Each	\$5.39	\$53.90
AS PER DWG D3518 REV. B B144988							
Line Total:							\$53.90
2	93635A212	Bolt	5/3/2016 Yes 5/3/2016	FN	50.00 Each	\$0.27	\$13.62
Line Total:							\$13.62
3	94205A240	Locknut	5/3/2016 Yes 5/3/2016		250.00 Each	\$0.12	\$30.45
AS PER DWG D3015 REV. C B144974							

Note:

4/29/2016



200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury ON K6A 1K7
Canada

Purchase Order
PO32209

Order Placed By
Chantal Lavoie

McMaster-Carr Number
2648251-01

Page 1 of 1

04/29/2016

Line	Product	Ordered	Shipped
1	2458K14 Carbon-Fiber Insert Ball Joint Rod End, 3/8"-24 Right-Hand Male Shank, 3/8" Ball ID, 1-1/4" L Thread	10 Each	10
2	93635A212 316 Stainless Steel Hex Head Cap Screw, M6 Thread, 1MM Pitch, 20MM Long, Fully Threaded, Packs of 25	2 Packs	2
3	94205A240 Type 316 Stainless Steel Nylon-Insert Locknut, M5X0.8 Thread Size, 8MM Wide, 5MM High, Packs of 50	5 Packs	5

Sp/6-05-03.